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10/576,787	04/21/2006	Toru Nebashi	1032865-000025	5903
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ART UNIT		PAPER NUMBER		
3729				
NOTIFICATION DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary

Application No.

10/576,787

Applicant(s)

NEBASHI ET AL.

Examiner

THIEM PHAN

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
4a) Of the above claim(s) 1-19 and 31-35 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 20-30 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date 6/20/08, 3/14/07, 4/21/06
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicants' election without traverse of Group IV, Claims 20-30, filed on 05/19/08 is acknowledged.

The Restriction mailed on 4/21/08 has been carefully reviewed, is held to be proper and is hereby **made Final**.

Applicants are required to cancel the nonelected claims (1-19 and 31-35) or take other appropriate action.

An Office Action on the merits of Claims 20-30 now follows.

Specification

2.

- On page 1, before "BACKGROUND ART", insert:

"CROSS REFERENCE TO RELATED DOCUMENT:

This application is the U.S. National Phase under 35 U.S.C. 371 of International Application PCT/JP05/12095, filed 06/30/2005.";

- The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Apparatus for mounting conductive balls";

- The abstract of the disclosure is objected to because the elected, claimed invention is about the Apparatus Claims. Correction is suggested by amending the Abstract to

incorporate the Apparatus claimed language in order to properly clarify the claimed invention. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 20, 21 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakemi et al (US 5,655,704).

Regarding claim 20, Sakemi et al teach an apparatus (Fig. 1, A) for mounting soldering balls (Fig. 4, 3), after setting a mask (4) on a substrate (2), in a plurality of apertures (4a) in the mask for disposing conductive balls on the substrate, the device comprising:

- a head including a means (Fig. 1, 12) for gathering conductive balls toward an area (Fig. 3, 4d) that is part of a surface of the mask from around the area; and
- a head supporting means (Fig. 1, 10 & 5) for supporting the head so as to move along the surface of the mask.

Regarding claim 21, Sakemi et al teach that the head supporting means (Fig. 1, 10 & 5) is capable of moving the head across the surface of the mask in at least one of an arbitrary direction, a direction that traces a zigzag, and a direction that traces a spiral (Fig. 3, Arrow Movement).

Regarding claim 30, Sakemi et al teach a mounting apparatus comprising: a filling device (Fig. 1, 14); and a device creating movement (Fig. 2, N1-N3) for setting the mask (4) on a substrate (2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemi et al in view of Yoshihiro et al (JP9-148332).

Regarding claim 22, Sakemi et al teach an apparatus (Fig. 1, A) for mounting soldering balls including a moving head (Fig. 1, 12) to gather conductive balls (Fig. 4, 3) across the surface (Fig. 3, 4d) of the mask, which reads on applicants' claimed invention.

Yoshihiro et al teach a particle arranging apparatus wherein the head supporting means (Fig. 4, 20) includes:

- a means for rotating the head (Fig. 4, 23) about a shaft (Fig. 4, 25) that is perpendicular to the mask (20) and a means for moving the shaft across the surface of the mask through spinning, and

- the means (24a & 24b) for gathering conductive balls moves conductive balls (2), by rotating the head, toward the area that is a circular area (21a) centered on a center of rotation of the head, in order to efficiently insert the conductive balls into the holes (Fig. 1, 5; paragraph xxx) of the mask.

It would be obvious to one of ordinary skill in the art at the time the invention was made to modify the head apparatus of Sakemi et al by applying the rotating head insertion of the conductive balls, as taught by Yoshihiro et al, in order to efficiently insert the conductive balls into the holes of the mask.

Regarding claim 23, Yoshihiro et al teach that the means for gathering conductive balls is a sweeper (Fig. 4, 24a & 24b) for sweeping a part of the surface of the mask around the circular area by using members that protrude from the head.

Regarding claim 24, Yoshihiro et al teach that the sweeper (Fig. 4, 24a & 24b) presses the part of surface of the mask around the area by using the members that protrude from the head.

Regarding claim 25, Yoshihiro et al teach that the means for gathering conductive balls includes a plurality of squeegees (Fig. 4, 24a or Fig. 3, 6 for detail) that protrude from the head toward the surface of the mask and sweep a part of the surface of the mask around the circular area.

Regarding claim 26, Yoshihiro et al teach that the plurality of squeegees (Fig. 4, 24a or Figs. 1 & 3, 6 for detail) extend in a tangential direction for the circular area.

Regarding claim 27, Yoshihiro et al teach that the plurality of squeegees (Fig. 4, 24a or Figs. 1 & 3, 6 for detail) are arranged so as to overlap in a direction of movement thereof.

Regarding claim 28, Yoshihiro et al teach that the plurality of squeegees (Fig. 4, 24a or Figs. 1 & 3, 6 for detail) press the part of the surface of the mask the circular area.

7. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemi et al in view of Inoue et al (US 6,402,014).

Sakemi et al teach an apparatus (Fig. 1, A) for mounting soldering balls including a moving head (Fig. 1, 12) to gather conductive balls (Fig. 4, 3) across the surface (Fig. 3, 4d) of the mask, which reads on applicants' claimed invention; except for having a nozzle for sweeping together conductive balls by blowing out gas from the head to the around the area.

Inoue et al teach an apparatus for forming bumps (Fig. 11, 3) with a nozzle (12) for sweeping together conductive balls by blowing out gas (13) from the head to the around the area, in order to insert the conductive balls into the holes (6) of the mask (2a), fast and at low cost (Col. 1, lines 55-57).

It would be obvious to one of ordinary skill in the art at the time the invention was made to modify the head apparatus of Sakemi et al by applying the blowing out gas nozzle to the conductive balls, as taught by Inoue et al, in order to insert the conductive balls into the holes of the mask, fast and at low cost.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 571-272-4568. The examiner can normally be reached on M & Tu, 6AM - 2PM, and W & Th, 9AM – 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Phan Thiem/

Tim Phan
Examiner
Art Unit 3729
July 1, 2008